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WHY ORGANIZED LABOR OPPOSES SCIENTIFIC MANAGEMENT ¹

SUMMARY

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SCIENTIFIC management so-called is one phase of the efficiency philosophy and movement which of late have gripped the imagination of the business world and which may be said to constitute the latest phase of capitalistic industrial development. The term "scientific management" is of quite recent origin. In its genesis it had reference specifically to the "Taylor System," first developed and applied by the late Frederick W. Taylor, the well-known author of "Shop Management," and joint inventor of the Taylor-White process for the manufacture of high-speed tool steel. By custom it has been extended gradually to include several modifications and imitations of the Taylor system, and some systems for which independence of

¹ The paper here printed was undertaken by the late Professor Hoxie at the request of the editors of this Journal, and had been virtually completed by him; none but slight verbal alterations have been made in his manuscript. The fulness of information which it shows, its insight, large sympathy, and high judicial quality add to the sense of loss which was felt at his untimely death (June 22, 1916) by all economists and especially by students of his chosen field.

development is claimed. Thus at the present time in common usage it is generally applied indiscriminately to the systems of Mr. Taylor, Mr. H. L. Gantt, and Mr. Harrington Emerson, and frequently to the principles and methods of several other so-called "efficiency experts."

The various systems thus commonly included under the general term differ specifically in many respects, but they all have in common certain purposes and methods which constitute the basis of organized labor's opposition.

Theoretically, scientific management is an attempt through accurate industrial analysis to discover and put into operation the objective facts and laws which underlie true efficiency in production. In its broadest and best application it attempts through this process of analysis to determine the best location and structure of the shop for the particular manufacture designed; the most efficient processes and methods of production in general and in detail; the material, organic and human arrangements and relationships best suited to further the productive process; the most effective character, arrangements and uses of the machinery, tools and materials employed; the methods of selection and training of the workmen and managerial force most conducive to efficiency; the character and amount of work which can and ought to be performed by each member of the labor and managerial force; the payment to be accorded each individual in the interests of efficiency and justice; and in general it aims to discover all the material, organic and human qualities, arrangements and relationships which will result in greatest output and lowest cost.

The principal and distinctive device by which scientific management attempts thus to discover and put

into operation the objective facts and laws of industrial efficiency, is time and motion study.

It is the use of time and motion study, not only for task setting but for the improvement and standardization of all the mechanical and organic features and arrangements of the productive concern, that chiefly distinguishes scientific management from all previous systems of production. Through the use of time and motion study and the modes of payment which it has devised, it has been claimed that scientific management not only increases efficiency and lowers costs, but does larger and more difficult things. We are told that it substitutes in the shop the government of fact and law for the rule of force and opinion, *i. e.*, substitutes the democracy of science for the autocratic rule of employers or workmen, and removes the rough, arbitrary and often unjust discipline of foremen and superintendents; assigns to each worker the task for which he is best fitted; trains the workers in the best and easiest methods of work; protects them from over-exertion and exhaustion; safeguards them against arbitrary discharge, and lengthens their term of service; raises wages; eliminates arbitrary rate-cutting, and affords increased opportunities for advancement and promotion; and finally, renders unnecessary trade unionism and collective bargaining as means of protection to the workmen.

Such in briefest outline is the essential character of scientific management and such are the essential claims made for it. Why then does organized labor stand in definite and uncompromising opposition to it ?

There are more than a hundred specific reasons alleged by the representatives of organized labor to account for their determined opposition to scientific management, and, doubtless, there are many other

points of opposition which are not openly proclaimed. In my study last year,¹ I attempted to gather up these scattered allegations and reduce them to some sort of system. Thus classified and generalized to the n th degree, they comprehend the following main points.

Scientific management, say the union representatives, is a device employed for the purpose of increasing production and profits, which concerns itself almost wholly with the problem of production, disregarding in general the vital problem of distribution. As such it is a reversion to industrial autocracy which forces the workers to depend upon the employers' conception of fairness and limits the democratic safeguards of the workers. It is unscientific and unfair in the setting of the task and in the fixing of wage rates; in spirit and essence it is a cunningly devised speeding-up and sweating system; it intensifies the modern tendency toward specialization of the work and the task; it condemns the worker to a monotonous routine and tends to deprive him of thought, initiative and joy in his work and to destroy his individuality and inventive genius; it lessens the continuity and certainty of employment, and leads to over-production and unemployment; it is incompatible with, and destructive of, collective bargaining and trade unionism.

Belief in these charges, in whole or in part, which I found on further investigation was general among organized laborers, is sufficient to account superficially and immediately for the determined opposition of unions and union men to the introduction and operation of scientific management. Yet the statement of these objections does not furnish any very real or significant answer to the question why organized labor opposes

¹ The reference is to the volume on *Scientific Management and Labor*, published by Professor Hoxie in 1915.

scientific management. It gives answer in terms of belief only. It gives no clue to the causes of this belief, and, therefore, none to the real nature of the opposition — to the forces which have created the opposition, and hence its strength and significance. In short, this statement of belief does not go to the root of the matter and enlighten us in regard to the fundamental question. In order to do this, we must dig below the surface and find the basic or ultimate reasons for these expressed beliefs.

During my work of investigation last year several suggestions were brought forward both by opponents and advocates of scientific management to account in general and causal terms for the attitude and belief of organized labor which I have tried to summarize above. It was suggested that the opposition was ascribable to various causes. (1) To general ignorance on the part of the union workers of the true nature, methods, and results of scientific management. (2) To general and fundamental distrust, which the workers have acquired from bitter experience, of anything new or different in industrial organization and methods. (3) To a propaganda of opposition among the rank and file of union men conducted by the leaders, who fear that if a better understanding is allowed to grow up between the real workers and the employers, their prestige and emoluments will be decreased, and even perhaps their positions abolished and they be reduced again to the ranks. (4) To the crudities of scientific management, still in its beginnings, and to the many abuses of it in practice by charlatans and by ignorant and unscrupulous employers, who trade upon the name without understanding the intricate and delicate nature of the thing, the time and patience necessary for its development, or who deliberately violate its spirit and methods for labor driving purposes. (5) To present dominant ideals of trade

unionism which are incompatible with those of scientific management as conceived by Mr. Taylor; a suggestion made by Mr. Taylor himself, who said: "Scientific management rests upon the fundamental assumption that a harmony of interests exists between employers and workmen. It is therefore organized for peace, while trade unionism is organized for war. . . . Scientific management rests upon the assumption that the welfare of all demands ever increased efficiency and output; trade unionism is committed to the limitation of output."

Doubtless each of these suggestions has some validity, but none of them nor all of them together seem sufficient to account for the general and determined opposition of the unions. Moreover, some of them, while perhaps not positive misstatements, are yet misleading in their implications. Let us then consider each of them briefly on its merits and through this try to arrive at the essential meaning of the union attitude toward scientific management.

(1) It is true that there has been and is now a great lack of adequate knowledge of the true nature, methods and results of scientific management as a whole on the part of the great mass of organized workers, both the leaders and the rank and file. But it is equally true that increase of knowledge, which is going forward steadily, does not result in any abatement of union opposition. Here and there, individual members of unions or small groups of union workers who are brought into actual contact with efficiency methods in the shop, do become reconciled to scientific management and are sometimes even enthusiastic advocates of it. But the significant thing to note here is that these same men generally cease to be "good unionists" in spirit, even if they do not drop their union affiliation altogether and become its

opponents. The increased knowledge which leading unionists have recently gained of scientific management, in theory and in practice, has intensified rather than lessened their opposition and that of the union movement in general.

(2) There is no doubt that general and almost instinctive distrust of the new, strange and different has played a part in rousing union opposition and to a certain extent is effective in continuing it. It has been ground into the consciousness of laborers by long and bitter experience that industrial change through invention and the application of new machinery and processes, however beneficial it is to society as a whole and even to labor in the long run, usually results in taking toll immediately from the individual worker or the working group concerned. It leads to displacement or lessened security of employment, often in lower wage rates and long hours, through the increased competition of lower grades of workmen and the lower cost and prices of the products affected. The history of industrial development is full of incidents of this kind, and no better example can be found than the case of the English weavers and spinners which Mr. Taylor was so fond of citing. For more than a generation after the application of the great inventions which revolutionized the cotton manufacturing industry in England, the competition of women and children operated to displace the men, to lower wages, and to lengthen hours, to such an extent that this industry as it then existed has become the classical example of modern labor oppression and degradation. The world, and even labor, ultimately gained; but meanwhile the workman concerned, the head of the family, sat at home, swept the house, cooked and darned, while his wife and children, down even to the age of five years, worked in the factory from four and five o'clock in the

morning till seven and eight o'clock at night, under the most unsanitary and unsafe conditions, often treated with unheard of brutality, and for an aggregate wage that scarcely sufficed for the food, clothing and shelter necessary to keep body and soul together. And what was true of the English cotton industry has tended to be true in a lesser degree of industrial changes generally. The workmen immediately concerned have tended to be penalized that society might reap the advantages of industrial progress. What wonder then that they have come instinctively to dread change of any kind that immediately affects their work and to oppose such change unless it is accompanied by positive guarantees that they shall immediately share in the social gains, or, at least, suffer no loss of employment and no derogation of their standards of work and wages as the result of the improvements? And surely we can hardly expect the workman with a dependent family and no savings ahead to welcome innovations that threaten to render less valuable his acquired skill, to throw him even temporarily out of employment, or to transfer him to employment which commands a lower wage rate, simply because these changes will redound ultimately to the benefit of society, to labor as a whole, or even in the long run to his own advantage, when a month of unemployment, two weeks even, may bring him and his to the verge of want, while a few months or years of employment at a lower wage level may mean the wrecking of all his hopes for a home, for the education of his children, for provision against sickness and old age, or may mean even the break-up and scattering of his family.

(3) That trade union officers and leaders have of late carried on a persistent and ever increasing propaganda against scientific management cannot be gainsaid.

Stray sentences from Mr. Taylor's works which could be interpreted as inimical to the workers and their welfare, and particular instances of abuses and perversions of scientific management, have been dramatically presented to the rank and file of unionism as indicative of the general character and results of the system, much in the same spirit as texts from the Bible were formerly used by the clergy to warn the unconverted of the dangers of hell fire. The motives which underlie this propagandistic work I need not attempt to interpret. Whatever the motive, the effect has undoubtedly been to rouse the latent distrust and quicken the opposition of the rank and file of organized laborers. But here again we find no force potent enough to account for the general opposition of the union laity; for it is a well established fact that the rank and file of unionism are quick to distrust their leaders when these leaders take a position which seems to run counter to their own preconceptions and beliefs drawn from immediate experience or tradition. Let the union leader endeavor to enforce on the rank and file something which is fundamentally opposed to their standards and beliefs, and he soon finds that his leadership is of the quality represented by that of the man at the head of the charging crowd. If he is to lead he must run fast to keep them off his heels, and he must run where the mind of the crowd wills.

(4) The crudities of scientific management in practice, and its many abuses by charlatans or by ignorant and unscrupulous employers — conditions and abuses the prevalence of which the scientific management group would be the last to deny or to attempt to minimize — furnish the union propagandists with an inexhaustible arsenal of facts and inferences with which to illustrate their texts and reinforce the multitude of charges which

they hurl against the new movement. But the very employment of these abuses to create opposition against scientific management *per se*, and the persistent refusal to attempt or even to admit any distinction between scientific management as exemplified in the better class of shops where its ideals and principles are being patiently worked out and its mushroom counterfeits where these ideals and methods are consciously perverted, point to grounds of opposition aside from and beyond its abuses, and grounds which evidently have not yet been disclosed.

(5) Finally, then, we come to Mr. Taylor's own explanation of union opposition in the incompatibility of the ideals of scientific management and unionism, in that the one is organized for peace and harmonious action between employers and workmen, the other for war; that the one demands an ever increased efficiency, while the other is committed to limitation of output.

Do we come here to the real and ultimate answer to the question, why does organized labor oppose scientific management? In a certain sense I believe that we do. I believe that the persistent and growing opposition of unionism to scientific management does rest finally upon a fundamental opposition of the ideals essentially characteristic of the two things. But I cannot subscribe to Mr. Taylor's analysis of this proposition — his explicit statement of the opposed ideals of scientific management and organized labor — because I believe that he has here misinterpreted the really fundamental ideals of trade unionism. He has mistaken action for motive, — the objective facts of union policy imposed by circumstances for the underlying purposes of unionism which have been forced to find expression in facts which belie their real nature. In so doing, I believe that he committed a similar error to that of the unionists in

judging the ideals of scientific management by its crudities and abuses.

In this connection it is misleading to speak of unionism as a whole. In fact there is no such thing as unionism in the sense of a consistent organic or functional unity. On the contrary, "there are in the United States today hundreds of union organizations each practically independent or sovereign, and each with its own and often peculiar structural arrangements, aims, policies, demands, methods, attitudes and internal regulations. Nor is there any visible or tangible bond that unites all these organizations into a single whole, however tenuous. Groups there are, indeed, with overstructures and declared common aims and methods. But group combats group with the bitterness that can arise only out of the widest diversity of ideals and methods." In short, trade unionism is everywhere very much of an opportunistic phenomenon. Unionists have been prone to act first and to formulate theories afterward; and they have habitually acted to meet the problems thrust upon them by immediate circumstances. Modes of action which have failed when measured by this standard have been rejected and other means sought. Methods that have worked have been preserved and extended, but always the standards of judgment have been most largely determined by the needs and experiences of the particular group concerned.

Under these circumstances, the generalization that we can most legitimately use is to speak of a dominant type of unionism, and we may perhaps say that this dominant type is represented functionally by the ideals and methods advocated by the leaders of the American Federation of Labor.

It is with respect to this dominant type of unionism that I believe Mr. Taylor has mistaken the objective

facts of policy imposed by circumstances for underlying purposes. In the case of this dominant union type the reality seems to be this: it is not organized for war, tho it *does* engage in warfare; it recognizes the crying need for increased efficiency and productiveness, tho it *does*, as a matter of fact, under certain circumstances and for reasons which we shall see later, limit the output. In both cases it has been forced to modify its general ideals in practice by the conditions and circumstances which it has found itself obliged to face.

The truth is that the outlook and ideals of this dominant type of unionism are those very largely of a business organization. Its successful leaders are essentially business men and its unions are organized primarily to do business with employers — to bargain for the sale of the product which it controls. It has found, however, by long and general experience that if it is to do business with the average employer or with associations of employers it must be prepared to fight. But throughout its history this fighting has been predominantly conducted with the purpose of forcing employers to recognize it as a business or bargaining entity. Its position and experience have been very much like that of a new and rising business concern attempting to force its way into a field already occupied by old established organizations in control of the market. Like the new business concern, it has had to fight to obtain a foothold. But from this to argue that it is organized for war is a complete *non sequitur*.

A somewhat similar situation has existed in regard to the matter of output. Business unionism has recognized, in general, the evils of restriction and has been willing to allow and even to encourage the introduction of new machinery and improved processes and methods, and to sanction increased effort and productiveness on the

part of its members up to reasonable physiological limits, provided it could be guaranteed that the improved methods and the increased exertion and output should not be made the means of lessening the share of the workers in the product or forcing upon them lower wage rates and inferior conditions of employment. But here again it has found the average employer or employers' association standing in the way. It has been taught by long and bitter experience that employers could and would make use of improvements and increased output by the workers not only to seize all of the gains but even to reduce the actual rates and returns to the workers.

The fact is that despite all theorizing to the contrary, the wages of workmen under the unscientific conditions that have prevailed in industry are not determined automatically by specific output or by supply and demand, but immediately by a process of bargaining. The two most important factors in determining the outcome of this bargaining process have been the customary normal or standard day's work and the customary standard of living of the workers concerned. These have been the practical standards of right, justice and expediency most generally considered. In bargaining between employer and workmen, as it has generally taken place in the past, if the employer could make it appear that, under the existing conditions, the workers were not producing up to the standard day's work, he had a strong case to show that wages ought to be lowered or that more work ought to be done for the same pay, which amounts virtually to lowering the wage. If, further, the employer could make it appear that, at the given wage rate, or on the basis of the standard day's work, the workers could secure a standard of living higher than that customary with them, he

had a strong case to show that the wage rate ought to be lowered, or, at least, that it should not be increased. In a contest of this kind the employer has been fairly sure of the support of public opinion, arbitrators, the police and the courts.

Now the workers have been taught by long experience that the average employer is constantly seeking to take advantage of these facts to secure an increase of the output *and at the same time to lessen the share and the amount of the product going to the workers*. Thus, when new machinery and methods are introduced, he points to the fact that, at the old wage rates and under the old conditions of work, the laborers are able to secure earnings more than sufficient to maintain their customary standard of living, and makes this a basis for lowering of rates or at least of a refusal to increase wages and improve conditions of work. Where competition is keen, he has usually been able to carry this off by adding to the arguments stated above that profits have not risen or that they have positively declined as the result of the improved methods. Where competition has been absent, *i. e.*, where a combination has controlled the goods market, the employer has usually been strong enough to carry his point regardless of facts and arguments. Thus new machinery and methods have generally not improved the wages and conditions of the workers *immediately concerned* and, as a matter of fact, have not infrequently lowered them, especially where these improvements have created conditions of increased competition among the workers, as they very generally have done.

Turning now to the other aspect of the matter — increased effort and productiveness on the part of workmen where no improvement in methods has taken place — the experience of the workers has been that the old

line employer has been constantly endeavoring to speed them up and over-reach them by the creation of "swifts" and "bell-horses," through the introduction of "company men," by threatening and coercing individuals whose native resisting power was weak or whose circumstances were precarious, and by offering secret premiums or bonuses. When through these methods some man or group of men has been induced to speed up, their accomplishment has been taken as the standard for all to attain. Thus, in the case of day work, the accomplishment of the strongest and swiftest was the goal set up for all, if wages were not to be lowered, while in the case of piece work the rate of wages tended to be lowered by these exceptionally rapid workers, because at the given rate it could be shown that they could make more than was necessary to maintain their customary standard of living. Under these circumstances the workers found that increased efficiency and output by members of their immediate group tended to mean not a corresponding increase of pay, but less wages for all, or more work for the same pay; and the only way they could see to prevent overspeeding and the lowering of rates was to set a limit on what any individual was allowed to do, in short to limit individual and group output until the employer could be forced to guarantee increased wages for increased effort and output.

These are facts which, I believe, cannot be controverted. No one recognized this more clearly than Mr. Taylor himself, whose denunciation of the blindness and unfairness of the average employer on account of them has not been exceeded in strength and bitterness by the labor leaders, and who declared publicly that were he a worker up against such conditions he would feel as they have felt and do as they have done in the matter of limitation of output.

In view of the facts of the case, then, as truly stated by Mr. Taylor, the circumstance that they do make war and that they do limit output gives so far no positive grounds for Mr. Taylor's generalization that unionism is organized for war, that unionism is committed to limitation of output, that the present dominant ideals of unionism are incompatible with those of scientific management, and that it is from this source that the opposition of unionism comes.

But if these conclusions hold, why, then, you will at once ask, does not unionism make an exception in the case of scientific management, which is itself supposed to be engaged in a struggle to eliminate those very coercive and oppressive tactics of the old line employers that have forced unionism to limit output and engage in industrial warfare? Why, in the case of scientific management, which is supposed to be committed to the strict maintenance of rates, to the elimination of speeders and to the increase of earnings with improved methods and increased output by the workers, does it not cease its warfare and raise its embargo on increased output? Doubtless the various causes of union opposition which we have discussed are a partial explanation. Ignorance of the true nature, methods and results of scientific management, distrust of the new and the different acquired by bitter experience, the propagandist influence of leaders, the crudities and abuses of scientific management in practice,—all undoubtedly tend to create and maintain union opposition.

But these things are not sufficient to account for it fully. The fact is, I believe, that behind and beneath all this there is an essential incompatibility between the basic ideals of scientific management and those of the dominant type of trade unionism. Not an incompatibil-

ity of the character Mr. Taylor believed to exist, but one still more fundamental. It is, I believe, this. *Scientific management can function successfully only on the basis of constant and indefinite change of industrial conditions* — the constant adoption of new and better processes and methods of production and the unrestrained ability to adopt the mechanical, organic and human factors at its disposal to meet the demands of these new productive processes and methods. On the other hand, *trade unionism of the dominant type can function successfully only through the maintenance of a fixed industrial situation and conditions*, extending over a definite period of time, or through the definite predetermined regulation and adjustment of industrial change — the establishment of definite rules and restraints governing the adoption of new processes and methods of production and the resulting mechanical, organic and human adaptations which the employer shall be allowed to make. Scientific management is essentially dynamic in its conception and methods. To impose static conditions, or to restrain it from taking full and immediate advantage of dynamic possibilities, robs it at once of its special purpose and effectiveness. Trade unionism of the dominant type is effective only where it can secure the strict maintenance of the industrial *status quo*, or can make its influence count effectively in all matters affecting its membership during the term of a contract. The conditions necessary to the effectiveness of the one are, therefore, incompatible with the effectiveness of the other.

To show the truth of these statements we have only to examine briefly the character and results of the central methods or means through which these contrasted entities, scientific management and the dominant type of unionism, function.

As I have stated previously, the central and essential instrument or method of scientific management, the fundamental means through which it secures knowledge of the industrial situation and which guides it in action toward the attainment of its ends, is time and motion study, applied not alone to the setting of tasks and the making of rates, but to the discovery and inauguration of improvements in the material, organic and human conditions and arrangements of the productive process. Thus used, time and motion study means constant and endless change in the methods of operation. No sooner is a new and better method found and established than an improvement upon it is discovered, involving perhaps new machinery, new tools and materials, and a new way of doing things. Change, change and still more change is the special purpose and mission of this essential instrument and central feature of scientific management. In short, time and motion study in its broader conception appears to be a method of analysis applied to almost every feature of the productive concern and process. And it is something which is not done once and for all, but is applied continuously throughout the life of the establishment. The scientific management based upon it is a perpetual attempt to put into operation the new and constantly developing arrangements continuously revealed by it to be more efficient. Not the least of these are the discovery and adoption of new and more effective operations and tasks, the reclassification of the working force to meet the needs of these new conditions, the shifting of the individual worker from class to class and task to task in order to discover the work for which he is best adapted, the handling of the individual laborer's work and pay with reference to his particular quality and temperament so as to bring into play his best productive possibilities. To

deprive scientific management of the immediate use of the results of time and motion study, especially to restrain it from taking advantage of the better classification of workers and the better adaptation of the particular worker to the particular task which time study reveals, would be to deprive it of its chief characteristic — its constant striving toward the end of maximum possible efficiency, the thing that essentially marks it off from ordinary systems of management and gives it productive superiority to them. In short, such deprivation would prevent it from functioning normally.

Turning now to unionism of the dominant type, we find that the great body of its essential policies, demands and methods center about and are in the interest of one great principle — *the principle of uniformity*, as regards all the conditions of work and pay affecting the group of workers which it represents. The principle of uniformity, fully developed and applied, requires that all men doing the same work should be supplied with the same tools and conveniences, work normally the same length of time and at the same maximum speed, turn out the same maximum quantity and quality of goods, and receive the same rate of wages. It is in the interest of this principle of uniformity that the unionists demand the establishment of a standard rate of wages as a fixed minimum, a normal day or week as a maximum, a standard rate of work or a standard day's or week's work, which in connection with a standard rate of wages tends to make this standard rate a practical maximum. It is largely to penalize the violation of these standards, so that there may be no inducement to break down the principle of uniformity, that unions demand pay at an extra rate for overtime and for doing work in irregular ways or under irregular circumstances. It is to prevent

the violation of these standards of work and pay, and so to protect the principle of uniformity, that they demand control over the working personnel through the closed shop, control over the output of the individual, the abandonment of bonuses and premium payments, and finally, collective bargaining — a contract made with the whole group of workers, extending over a definite period and covering all the conditions of work and pay for all the men during the contract period.

The reasons for the insistence upon this principle of uniformity have been indicated earlier in this paper. It is not that the unions desire the limitation of output and are definitely committed to it, but that long experience with the average employer has ground into their souls the belief that employers as a class are constantly seeking to lower the wage rate, and at the same time to increase the speed and exertion of the workers of the group through driving or bribing individuals of the group to greater speed and longer hours; and then are setting up the work and pay of these men as evidence to prove that the others are soldiering on the job and must increase their exertions or suffer a reduction of wage rates or a lengthening of hours of work. The only effective way that the unions have found for preventing this underbidding on the part of individual workers and the consequences indicated, is to cut out all working competition between the members of the group, by insisting on the definite establishment of uniform standards to be observed by all and to cover all the conditions of work and pay — *i. e.*, by the establishment and maintenance of the general principle of uniformity, applied to all the members of each particular working group.

And it is evident, say the unionists, that the principle of uniformity thus conceived cannot be established and

maintained against the employer who wishes to violate it unless all the conditions and methods of work and pay are *fixed* for the term of a contract — that is, unless all change is either barred, or is predetermined and regulated through the establishment of definite rules and restraints governing the adoption of new processes and methods, and the resulting mechanical, organic and human adaptations and changes in payment which the employer shall be allowed to make during the contract period. Any change in machinery, processes, tools, materials, products, not predetermined or regulated, opens the way for new classifications of work and workers not covered by the contract and thus opens the way by which the employer may seek to overreach the men, to degrade workers, establish new and lower rates of pay and less advantageous conditions of work; in other words to reintroduce competition of workman with workman and consequent underbidding among them, and thus demolish entirely the structure of uniformity which the unions have reared.

Nor is this all. Looking at the matter in the long run and assuming, as the unions habitually do, that the employer is on the outlook to profit at the expense of the workers, not even the predetermination and regulation of changes by means of periodical contracts between the employers and unions can save the principle of uniformity from ultimate destruction where time and motion study is tolerated. For time and motion study means a constant tendency toward the break-up of old established crafts and the substitution of specialist workmen for the all-round craftsmen. Further, through it there is a constant discovery, gathering up and classification by the management of the knowledge of the best ways of performing work, on the basis of which definite instruction cards can be issued. With these and

the guidance of functional foremen, relatively unskilled workers can be taught in a short time to do efficiently a very great part of the work which only skilled craftsmen could be trusted with formerly. And still further, the possession of this definite information enables the employer to measure more accurately the work and capabilities of each man, and to determine more accurately what wage payments would induce each worker to do his best. Where time and motion study is allowed, then, even under regulation, the employer at the end of each contract period would be less and less dependent on the union and more and more inclined to substitute specialist workmen for craftsmen, and efficiency methods of payment for the uniform day wage. But it is a notorious fact that relatively unskilled specialist workmen do not make good unionists, and that efficiency methods of payment tend to center the attention and interest of each workman on his own affairs and thus to lessen the feeling of mutual interest and common dependence among the workers. Under these circumstances the union could not long maintain the conditions which it considers essential to industrial democracy in the shop and enforce the principle of uniformity against the will of the employer.

There appears to be no getting round the fact, therefore, that constant indefinite change of industrial conditions, such as is essential to the functioning of scientific management, is in clear contradiction to the principle of uniformity which is the central and fundamental principle of trade union policy and is absolutely essential, from the point of view of the dominant type of unionism, to its successful functioning. Instinctively, therefore, the dominant type of unionism fights against change and against time and motion study, the mother of change.

But, you will again say, granting the incompatibility of these fundamental principles, why does not unionism make an exception of scientific management and scientific management employers, who are not trying to overreach the workers but on the contrary are definitely committed to maintenance of rates and to a leveling up of earnings with every increase of efficiency? The answer of the unionists is that these may be the ideals of scientific management but they have not worked out in practice. Scientific management may maintain rates and level up the earnings of the workers at any given task; but what good does that do the skilled craftsmen, the bulk of the old line unionists, when, through the constant and unending change which scientific management is inaugurating, it destroys the very crafts to which the rates for which they stand apply, and forces them to join the crowd of specialized workmen whose earnings may be raised by scientific management but nevertheless will still be lower than the old craftsman's pay? In scientific management at its very best unionism of the dominant type sees its worst enemy, in that scientific management means the abolishment of the very craft conditions and the very psychology of industrial democracy upon which the unions have painfully erected their superstructure of uniformity, and upon whose continuation their identity and continued functioning depend.

Specialize the old line craftsman, destroy his craft, and however high your ideals and kindly your motives, you are destroying the foundations upon which the dominant type of unionism is reared. Every union leader feels this instinctively, every one who has come into contact with scientific management and who has an understanding of unionism knows that this is what it is doing. Here, I believe, we have the final answer to

the question: "why organized labor opposes scientific management." Scientific management, properly applied, normally functioning, should it become universal, would spell the doom of effective unionism as it exists today.

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